CLAIMS

What is claimed is:

1. In a communication device that uses session initiation protocol (SIP) to transmit data used to set up communication with another device, a method of compressing the data, comprising:

at a serializer in the communication device, receiving a SIP data structure that represents a SIP message;

generating a tokenized message that includes a list of tokens representing semantic elements of the SIP data structure; and

transmitting the tokenized message from the communication device to the other device.

2. The method as recited in claim 1, wherein generating a tokenized message is performed without generating a plaintext message that represents the SIP message.

3. The method as recited in claim 1, wherein at least some of the tokens included in the tokenized message are selected based on knowledge of the semantic meaning of the SIP data structure.

4. The method as recited in claim 1, wherein generating a tokenized message is performed in a stateless manner that does not require knowledge of any previous SIP messages that have been generated by the communication device.

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5. The method as recited in claim 1, wherein at least some of the tokens included in the tokenized message represent semantic elements that are common to substantially any legal SIP message.

6. The method as recited in claim 5, wherein other tokens included in the tokenized message are selected to represent at least one of a telephone number and an IP address.

7. The method as recited in claim 5, wherein other tokens included in the tokenized message are selected to represent strings in the SIP data structure.

8. The method as recited in claim 5, wherein generating the tokenized message is performed using at least one static dictionary located at the communication device.

9. The method as recited in claim 8, wherein:

generating the tokenized message is further performed using a dynamic message dictionary that includes strings identified in the SIP data structure; and

the method further comprises transmitting the dynamic message dictionary with the tokenized message from the communication device to the other device.

10. The method as recited in claim 1, wherein generating the tokenized message is performed using a tokenized SIP serializer that also serializes the data for transmission to the other device.

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11. The method as recited in claim 1, wherein:

the serializer is a conventional SIP serializer that generates a plaintext message representing the SIP message; and

generating the tokenized message is performed using a tokenizer that operates with the conventional SIP serializer and generates the tokenized message from the plaintext message.

12. The method as recited in claim 1, wherein transmitting the tokenized message is performed such that the other device can decode the tokenized message to obtain the SIP message, thereby enabling a communication session to be established between the communication device and the other device.

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13. In a communication device that uses a session initiation protocol (SIP) to receive data used to set up communication with another device, a method of decompressing the data, comprising:

at the communication device, receiving a tokenized message that includes a list of tokens representing semantic elements of a SIP data structure generated by the other device, wherein the SIP data structure generated by the other device represents a SIP message;

decoding the tokenized message by identifying the semantic elements represented by the tokenized message, thereby obtaining a decoded SIP data structure; and

using the decoded SIP data structure to establish or continue a communication session between the communication device and the other device.

14. The method as recited in claim 13, wherein the tokenized message is received by a tokenized parser of the communication device.

15. The method as recited in claim 14, wherein decoding the tokenized message is performed without generating a plaintext message that represents the SIP message.

16. The method as recited in claim 13, decoding the tokenized message comprises identifying semantic elements that correspond to tokens of the tokenized message using knowledge of the semantic meaning of SIP data structures.

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17. The method as recited in claim 13, wherein decoding the tokenized message is performed in a stateless manner that does not require knowledge of any previous SIP messages that have been generated by the other device.

18. The method as recited in claim 13, wherein at least some of the tokens included in the tokenized message represent semantic elements that are common to substantially any legal SIP message.

19. The method as recited in claim 18, wherein one or more of the tokens included in the tokenized message are selected to represent at least one of a telephone number and an IP address.

20. The method as recited in claim 18, wherein other tokens included in the tokenized message represent strings in the SIP message.

21. The method as recited in claim 18, wherein decoding the tokenized message is performed using at least one static dictionary located at the communication device.

22 The method as recited in claim 21, wherein:

decoding the tokenized message is further performed using a dynamic message dictionary that includes strings identified in the SIP message; and

the method further comprises receiving the dynamic message dictionary from the other device with the tokenized message.

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23 The method as recited in claim 13, wherein decoding the tokenized message is performed using a tokenized SIP parser that also parses the SIP message.

24 The method as recited in claim 13, wherein decoding the tokenized message comprises:

using a detokenizer that receives the tokenized message and generates a plaintext message representing the SIP message; and

using a conventional SIP parser to parse the plaintext message to obtain the SIP data structure.

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25 A communication device for handling session initiation protocol (SIP) transactions in a network, including generating SIP data structures, the communication device comprising:

an application that generates SIP data structures;

a tokenized serializer in the communication device configured to receive SIP data structures that represent outgoing SIP messages and to generate outgoing tokenized messages that include lists of tokens representing semantic elements of the SIP data structures; and

a tokenized parser configured to receive incoming tokenized messages that includes lists of tokens representing semantic elements of SIP data structures generated by another device and to decode the incoming tokenized messages by identifying the semantic elements represented by the tokenized message.

26. The communication device of claim 25, wherein the tokenized serializer operates without generating plaintext messages that represent the outgoing SIP messages.

27. The communication device of claim 25, wherein the tokenized parser generates decoded SIP data structures without generating plaintext messages representing the incoming SIP messages.

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28. In a network that transmits a session initiation protocol (SIP) data stream, a method of monitoring the SIP data stream using a network information gathering device, comprising:

obtaining a copy of the SIP data stream, the SIP data stream including a tokenized SIP message that includes a list of tokens that represents semantic elements of a SIP data structure generated by a communication device associated with the network;

using a detokenizer, decoding the tokenized SIP message to generate corresponding plaintext SIP data; and

accessing the plaintext SIP data using the network information gathering device.

29. The method as recited in claim 28, wherein decoding the tokenized SIP message comprises identifying the semantic elements represented by the tokenized message.

30. The method as recited in claim 28, wherein decoding the tokenized SIP message comprises identifying semantic elements that correspond to tokens of the tokenized SIP message using knowledge of the semantic meaning of SIP data structures.

31. The method as recited in claim 28, wherein decoding the tokenized SIP message is performed in a stateless manner that does not require knowledge of any previous SIP messages in the SIP data stream.

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32. The method as recited in claim 28, wherein the SIP data stream includes SIP data originating from more than one originating device.

33. The method as recited in claim 28, wherein the network information gathering device comprises a packet sniffer that obtains the copy of the SIP data stream.

34. The method as recited in claim 28, wherein the network information gathering device comprises a network analyzer that obtains the copy of the SIP data stream.

35. The method as recited in claim 28, wherein the network information gathering device comprises a debugging tool that obtains the copy of the SIP data stream.

36. The method as recited in claim 28, further comprising obtaining quality of service metrics from the plaintext SIP data using the network information gathering device.

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